

# RESISTING HIGH CALORIE FOODS: HEART RATE VARIABILITY AS AN INDICATOR OF SELF-REGULATORY PROCESSES IN RESTRAINED EATING BEHAVIOUR

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**INTRODUCTION.** In our affluent western society many people, especially young women, try to restrict their food intake in order to conform to the society's thin ideal in spite of the omnipresence of high-calorie foods. However, this dieting behaviour is often linked to eating binges, leads to weight gain in the long run, and is the best established risk factor for eating disorders. Therefore, it is of great importance to study the factors associated with successful vs. unsuccessful control of eating behaviour. Restrained eaters are people who habitually try to resist high calorie foods in order to restrict their food intake and have been shown to be prone to a breakdown of self-regulation. Heart rate variability (HRV) is a psychophysiological measure calculated from heart rate. It serves as an indicator of self-regulatory capacity and effort because of neural linkages between heart and brain. Resisting high calorie foods is associated with an increase of state-HRV and temporarily depletes self-regulatory resources, a mechanism which could explain breakdowns in self-regulation of food intake. Therefore, the current study investigated the changes in HRV during confrontation with high vs. low calorie foods in restrained and unrestrained eaters.

**METHOD.** After a three hour-fast, 60 female university students were exposed to either high (brownie) or low calorie food (carrot). They were asked to look at the food and smell it, but to refrain from eating it. Heart rate was continuously recorded during exposure, as well as during rest before and after exposure. Restrained eating was assessed with the Dutch Eating Behavior Questionnaire.

**RESULTS.** HRV increased during exposure. This increase was characterised by an interaction of exposure condition and restrained eating. In the high-calorie condition, HRV increase was related to restrained eating. The higher the restrained eating scores, the stronger was the increase in HRV. In the low-calorie condition there was no significant association between HRV and restrained eating.

**DISCUSSION.** The results suggest increased self-regulatory effort in highly restrained eaters when exposed to high calorie foods. In addition, restrained eaters seem to have spared their self-regulatory resources when exposed to diet-congruent low calorie food. These findings provide first insights into dietary strategies at a basic self-regulation level, using psychophysiological methods. In the long run, a detailed understanding of basic self-regulatory mechanisms in dietary restriction will help to develop strategies for healthy eating behaviour in normal-weight and over-weight populations.